# STEAM MACHINES

# THE TIME FOR TECHNOLOGY

## LEVEL

Level 3 – Level 4

## ACTIVITY DESCRIPTION

Students explore railway technology over time. They learn about steam, diesel, electric and maglev trains and use a concept map to record information.

## THEME

- Design and Technology

## MATERIALS REQUIRED

- Railway Facts Sheet
- Concept Map worksheet

## INSTRUCTIONS

Students read through the “Railway technology over time” worksheet. Using the concept map and comprehension skills, students write information dot points in each of the different train sections. They consider similarities and differences or positive and negatives and discuss these with students around them. As an extension activity students could cut and colour the pictures of the trains and create a poster to display their information and ideas.

## SUGGESTIONS FOR ASSESSMENT

Level of engagement in group discussion. Ability to read, comprehend and respond to questions. Completed concept map worksheet.

## CURRICULUM LINKS

### HISTORY

A significant example of change and a significant example of continuity over time in the local community, region or state/territory (VCHHK073)

# RAILWAY TECHNOLOGY OVER TIME – FACTS SHEET

## EARLY TRAINS

The first trains were single wagons pushed or pulled by people or animals along tracks, and were used to move goods, such as coal.

## STEAM TRAINS

Steam trains were the first type of trains to not rely on people power. They use coal in a firebox to boil water until it turns to steam. The steam is forced through powerful pistons to give the engine the power to drive the wheels. At first, steam engines moved mainly goods, but were soon used to carry passengers as well. Steam engines are still in use all over the world, although most have been replaced by diesel or electric trains.

## DIESEL LOCOMOTIVES

Diesel mechanical locomotives were first introduced in Australia in the 1930s and these were replaced in the 1950s by diesel electric locomotives. These were a powerful addition to the railways. Diesel fuel powers an engine which drives a generator to make electricity. The electricity powers traction motors that turn the wheels. Diesel electric locomotives were used to transport enormous quantities of materials over huge distances. They were also more efficient and smoother than steam trains and carried much heavier loads. Both steam and diesel locomotives are used at Puffing Billy Railway.

## ELECTRIC TRAINS

Passenger electric trains were first introduced in the late 1870s. The electric engines get their power from overhead wires or through an extra third rail. However, building an electric line is expensive so these trains are usually found in city areas where the route is busy enough to pay for the expensive set-up. Electric trains are faster, quieter, and simpler to run than diesel trains. Electric trains are also better for the environment as they do not discharge exhaust fumes.

## MAGLEV TRAINS

Maglev trains do not use an engine to power them. They run in a guideway with magnets in the track ahead of them that move them along. Maglev trains are smooth, fast and environmentally friendly, giving off little noise or exhaust pollution. However, the track is expensive and there are problems moving the trains from one track to another.

# CONCEPT MAP

Use the information from the facts sheet to add information dot points around each of the train types